



COLONY OF SEYCHELLES

ANNUAL REPORT

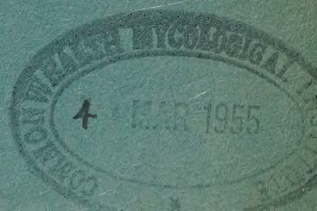
OF THE

DEPARTMENT OF AGRICULTURE

FOR THE YEAR

1953

Printed by the Government Printer,
at the Government Printing Office,
Victoria, Mahé, Seychelles.





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Annual Report of the Department of Agriculture for the Year, 1953.

Table of Contents

	<i>Page</i>
Introduction.	2
Policy of the Department.	2
Weather.	3
Section I — Agriculture, Fisheries and Forestry in the Colony.	
A. CROP HUSBANDRY.	
1. Coconuts.	3
2. Cinnamon.	4
3. Patchouli.	5
4. Vanilla.	5
5. Other crops.	6
B. ANIMAL HUSBANDRY.	
1. Cattle.	7
2. Pigs.	7
3. Poultry.	7
C. FISHERIES AND SUNDRY PRODUCTS.	
1. Fish.	7
2. Turtles.	8
3. Other Produce.	8
D. FORESTRY.	
1. General.	9
Section II — The Work of the Department.	
1. Forester's Report.	9
2. Stock Inspector's Report.	16
3. Agricultural Chemist's Report.	19
4. Work on pests, diseases and vermin.	20
5. Unleased Crown Lands.	21
6. Grand'Anse Estates.	22
7. Central Oil Expeller.	28
8. Central Distillery.	28
9. Trials, Extension Work and Sundry Services.	29
Section III — Legislation.	
1. Legislation enacted.	29
Section IV — Staff and General.	
1. Staff changes.	29
2. Acknowledgements.	30

Introduction.

The economy of the Colony remained closely related to world prices for copra, cinnamon leaf oil and vanilla. 1953 was a year of great prosperity for coconut estates, and remunerative prices were obtained for cinnamon products and vanilla. With good markets for the principal export products and ample supplies of foodstuffs from overseas there was a growing tendency for the local production of foodcrops to be neglected. The majority of the population were able to obtain adequate supplies of fish, however, and in addition, the ever-present supply of coconuts (selling locally at 10 to 15 cents of a rupee) ensures cooking oil for every household, and the many thousand of breadfruit trees in the Colony contribute a substantial quantity of starchy food.

In previous annual reports there have been well-informed critical examinations of the agricultural pattern of the Colony. In brief, it may be said that coconuts are likely to remain the dominant crop within their ecological limits, which include the majority of the coral islands and the coastal flats and alluvial slopes of the granitic islands. The cinnamon which clothes, untended, many thousand of acres of lateritic hillsides will, it is hoped, remain a valuable asset—though the future of the leaf-oil trade continues to cause some anxiety owing to the long-threatened severe competition from lignin vanillin. Despite the competition of eugenol and lignin vanillin there is still a remunerative market for natural vanilla and this high quality product of the Colony is now enjoying a modest “boom” after many years of low prices. The eroded lateritic hillsides have been largely unproductive since the days when deforestation was followed by fires and the heedless cultivation of manioc on steep eroding slopes. It has been proved beyond dispute that these eroded areas can be brought back into useful cultivation by terracing and fertility-building husbandry, but apart from the rehabilitation of small areas by the Department there has been virtually no progress. It would be on these now eroded slopes that any new export crops are likely to be grown, since, apart from the upland forest areas, they are virtually the only areas where remunerative close-planted coconut groves do not exist. Despite many years of introduction and trial, however, the only other export crop which has found favour, apart from those already mentioned, is patchouli — which, unfortunately, replaces vegetables in existing fertile vegetable gardens whenever world prices encourage its cultivation.

The higher slopes of the granitic islands have lost much of their valuable forest cover owing to exploitation and fire in the past. As in most countries private owners are disinclined to re-afforest and it is only on Crown land that really active work proceeds.

Policy.

The policy of the Department during the year under review was to encourage, and take an active part in :

- The conservation and improvement of natural resources.
- The improvement of animal and crop husbandry and processing.
- Increased mixed farming.
- The rehabilitation of eroded slopes.
- The cultivation of promising export crops.
- Increased food production.
- Re-afforestation.
- Pest control.

The implementation of this policy is described in Section II of this Report.

Weather

Apart from the usual dry spell in July and August rainfall in 1953 was well distributed and ample.

Rainfall & Air Temperature, Victoria.

1953 Month.	Rainfall (inches)	Air Temperature (Fahrenheit)			
		Mean Max.	Mean Min.	Highest Max.	Lowest Min.
January	20.47	83	76	88	71
February	6.12	84	76	88	74
March	10.98	87	77	90	75
April	9.63	87	78	92	74
May	11.97	87	78	90	75
June	5.10	85	77	88	73
July	1.72	82	76	84	72
August	1.16	82	76	85	73
September	8.89	82	76	86	73
October	5.49	83	77	88	73
November	17.08	85	76	88	73
December	12.12	85	77	90	75
Total	110.73				

Total Rainfall in 1953 at Recording Stations.

Mahe — Victoria	110.73 inches (at Port Office)
— Mont d'Or	136.86 inches (1,300 ft. above sea level).
— Grand'Anse	132.00 inches (sea level).
Praslin	98.20 inches (sea level).
La Digue	63.78 inches (sea level).

Section I — Agriculture, Fisheries and Forestry in the Colony**A. CROP HUSBANDRY.****1. Coconuts.**

Actual exports of copra in 1953 totalled 7,398.223 metric tons, valued at Rs. 7,015,504 f. o. b. These figures include a carry-over of 1,504.750 tons (valued at Rs. 1,148,982 f. o. b.) from the 1952 production. 160.227 tons (valued at Rs. 159,208) of 1953 production remained unexported at the end of the year. The following table shows actual production for export during the last three years, together with f. o. b. values. An unrecorded tonnage of copra is milled locally for edible oil and for soap-making. 33,750 fresh nuts were shipped to the United Kingdom.

Year	Copra Production for export (metric tons)	Value f. o. b.
1951	6,574	Rs. 7,435,954
1952	6,210	Rs. 4,890,335
1953	6,054	Rs. 6,025,730

The f. o. b. price ranged from £73.5.0 to £76.5.0 per ton, compared with £50.11.0 to £76.6.0 per ton in 1952. The local selling price, at Victoria, ranged from Rs. 805 to Rs. 855 per ton compared with Rs. 442 to Rs. 676 per ton in 1952. The considerable increase in the local selling price was, however, due in part to the reduction of export duty from 23½% to 5% of the f. o. b. price on the occasion of a change in the method of taxing agricultural producers. A committee of growers and exporters negotiated contracts with overseas buyers, selling the first consignment of the year to Sweden and later consignments to India.

In general, it can be said that the quality of copra presented for export was very satisfactory. Further reference will be found in the Agricultural Chemist's report in Section II.

A few of the more enlightened growers expended part of their substantial profits on manuring, selective weeding, well-spaced replanting, and general estate improvement. Unfortunately many close-planted groves are now reaching senescence and are due for drastic thinning and extensive replanting, but growers (with memories of ample crops yet ruinous prices) are reluctant to fell a single tree during this period of profitable production. As a result, groves which are already overcrowded are being inter-planted with seedlings which will have the worst possible start in life.

Melittomma insulare continued to cause the loss of large numbers of trees at the height of their productive life, especially on the island of Praslin. The pest was recorded (for the first time) on the island of Curieuse. *Oryctes monoceros* was found to be causing serious damage to newly planted coconuts on La Digue and elsewhere. Reference to the Department's work in connection with these pests will be found in Section II para. 4.

Nut yields on most estates were lower than during the previous season. This was probably due to the effect of the prolonged dry spell in 1952 on the laying down of bud initials.

Two coir factories exist in Mahe, and one (operated by an oil engine) supplied the local market with ropes, cordage and mattress fibre and produced small quantities for export.

A new development in 1953 was the Central Oil Expeller in Victoria, which was completed early in the year. Further reference will be found in Section II para. 7.

2. Cinnamon.

Cinnamon leaf oil, though fetching lower prices than in 1952, found a ready market during the year. About one quarter of the year's exports represented a carry-over from 1952.

The local selling price ranged from Rs. 9 to Rs. 12.50 per kilo compared with Rs. 9 to Rs. 15 per kilo in 1952. No export duty was payable during 1953.

The following table shows actual exports during the last three years:

Year	Quantity	Value
	Kilos.	Rs.
1951	99,332	2,211,774
1952	69,127	1,201,298
1953	99,296	1,045,989

Cinnamon bark sold well during the year, the local selling price rising to Rs. 400 per ton as compared with Rs. 260 to Rs. 275 per ton in 1952. The bark from the naturally growing untended trees of Seychelles does not compete with the high grade quills and chips of Ceylon and has its own standards of quality. The following table shows actual exports during the last three years :

Year	Quantity (Metric tons)	Value Rs.
1951	207	76,275
1952	143	61,327
1953	516	201,248

On the whole, the standard of quality of cinnamon bark and leaf oil presented for export was satisfactory, but two cases of adulteration of the oil were detected. Further reference will be found in Section II para. 3.

Owing to the weakening effect of too frequent lopping it is inadvisable to harvest more frequently than once in three or more years, but good prices have resulted in a tendency for small proprietors to harvest too often. The result of this has been the choking of many weakened cinnamon areas by creeping grass and fern.

Very large accumulations of spent cinnamon leaves occur near many of the distilleries, despite the proven value of this material for manuring coconuts and other crops. Owing to the increasing cost of fuel a proportion of spent leaves is now frequently used for firing boilers, or direct-fired stills, and one distiller experimented with a simple tubular drier.

Distillers discussed with Government the advisability of a change in the method of sale of leaf oil, which has for many years been through a sole agent with headquarters in London. No decision was reached,

3. Patchouli.

There was little overseas demand for patchouli oil and local selling prices ranged between Rs. 45 and Rs. 75 per kilo., which was insufficient to stimulate production on any scale. There was an increased demand for dry leaves (for distillation overseas) and this stimulated planting towards the end of the year.

The following table shows exports of oil and dry leaf during the last three years :

Year	Quantity of Oil	Value	Quantity of leaves	Value
1951	2,286 kgs.	Rs. 332,299	12 tons	No
1952	2,718 „	187,318	40 „	record
1953	2,016 „	114,107	53 „	

The quality of oil and leaves presented for export was generally satisfactory, one consignment of leaves being rejected. Further information will be found in Section II para. 3.

4. Vanilla.

Good crops were harvested and it was fortunate that good market conditions also prevailed. The local selling price ranged from Rs. 7 to Rs. 18 per 500 grms. of cured beans, compared with Rs. 6.50 to Rs. 7 in 1952. A rather sudden rise in the London market price had the effect, however, of adding to the profits of local dealers rather than of the growers themselves. A dealer buying for the U. S. A. market encouraged growers to produce a drier type of bean than usual.

Damage to vanilla flowers by birds was reported from La Digue where the vines are grown on natural supports scattered throughout the estates. The line-planted vines suffered less as bird-scaring is practicable in such plantations.

Flowering during 1953 was poor, and a small crop must be expected in 1954.

The following table records the quantity and value of vanilla exports during the last three years. All export is in the form of cured "beans":

Year	Quantity	Value
1951	484 kgs.	Rs. 8,987
1952	5,927 kgs.	Rs. 79,550
1953	5,642 kgs.	Rs. 133,800

5. Other Crops.

(a) Non-food crops.

One small consignment of clove-leaf oil and one of Eucalyptus citriodora oil were exported during the year. Tobacco continued to be grown on a small scale, chiefly for the production of air-dried twine-wrapped plug for the local market. One estate, however, manufactures and retails cigarettes. Apart from an interest by a few growers in castor seed and papain production there was no evidence of any new export crops gaining in popularity.

(b) Food and Beverage Crops.

For many years there has been virtually no attempt to meet the Colony's requirements of starchy foods from local produce — indeed, imported cereals have been made available at a subsidised price. During the war and post-war years Government has favoured the direct production of green and root vegetables by the Government-sponsored Grand'Anse Estates and their marketing, for the benefit of Victoria consumers, at prices which — judging by the figures published by the Grand'Anse Estates — are below the cost of production. No doubt this policy was adopted for very good reasons and a substantial contribution to the Colony's total food supplies was undoubtedly achieved but a rather disconcerting effect has been the discouragement of private enterprise. Temperate-climate vegetable are a costly luxury and the volume of production of these is, and no doubt always will be, extremely small. Tropical vegetables and fruits of almost every description can be grown with the greatest of ease in the alluvial soils and on terraced and improved hillsides, and the average consumer of fish, rice (or maize meal) and coconut oil is not greatly interested in exotic greenstuff and roots and is content with pumpkins, bananas, spinach, and the like. The town-dwellers of Victoria are loud in their protests if the market is short of vegetables but the low prices prevailing and the rapidity with which a state of glut occurs tends to discourage commercial growers. A very low value is still placed on food in these favoured islands, but no doubt the situation will right itself when the profits from copra are less dazzling. 1953 was a particularly difficult year for temperate climate vegetables, but tropical sorts yielded well.

Fumagine of citrus and root-knot eelworm of tomatoes caused some losses. Mosaic of manioc was normally prevalent and the banana pest *Cosmopolites sordidus* was widespread but not exceptionally damaging. Further reference will be found in Section II para. 4.

Coffee could be grown in sufficient quantity to meet the Colony's needs. *C. robusta* grows and yields well, but the local method of preparation yields a bean which it would be complimentary to classify as "foxy" and a drastic change will be required if export is ever contemplated. In certain high altitude areas of Mahe conditions for tea are excellent but large-scale development cannot be advocated. Hand-rolled small-holder tea is a possibility, to meet local requirements only.

B. ANIMAL HUSBANDRY.

1. *Cattle.*

Apart from the very worth-while progress reported by the Stock Inspector in his review of the Department's activities there is little to report concerning the Colony's cattle. Public response to the provision of a stud bull service has not been great, but as a result of this service and sales of surplus stock the proportion of Friesian and Sindhi blood in the Colony's cattle is slowly rising. It is when Departmental requirements of Sindhi X Friesian cattle have been met and first class animals can be sold to the public that a real change is likely to take place. 366 head of cattle were slaughtered on permit (265 bulls and 101 cows, permits for slaughter of the latter being refused unless the animals were unfit for breeding). One prosecution for unauthorised slaughter took place. Two cases of red water and a number of cases of malnutrition were observed.

2. *Pigs.*

Large White pigs are now to be found throughout the Colony, as a result of sales by the Department. Though somewhat subject to heat stroke and perhaps rather larger than the ideal for a "cottager's pig" this breed is a tremendous advance over the local small black in-bred animal, when well fed. To a newcomer the flavour of the Colony's pork is remarkably good and the pig remains one of the most valuable forms of livestock on the islands. Apart from some cases of malnutrition and lice no serious ailments were observed and the pig population shows no signs of declining.

3. *Poultry.*

A number of poultry keepers have been increasing the amount of Rhode Island blood in their flocks, and where Rhode Island is crossed with the local Gallega (bare-neck) fowl a very hardy type results and both egg production and carcass quality show an improvement as compared with the usual nondescript flock. Ducks are popular, and do well. Some guineafowl and turkeys are kept. Fowl pox was, unfortunately, widespread during the year. Coccidiosis, eye-worm, poisoning and infestations by parasites were observed, but no serious losses resulted as far as is known.

C. FISHERIES AND SUNDRY PRODUCTS.

1. *Fish.*

Seychelles fisheries have reverted to centuries-old methods after the brief period when the Colonial Development Corporation was operating with motor fishing vessels. Hand-lining from whalers, basket trapping, and seining off-shore provide the bulk of the catch. A few small sailing vessels hand line for shark on more distant banks but the vast resources of the Colony's outlying banks remain scarcely tapped. Owing to the long distances and the limited profits to be derived from dried salted fish it is thought that some form of factory ship equipped with refrigeration and fish-meal plants might be the answer, but the failure of the C. D. C. enterprise has had a somewhat dampening effect on those who might invest money in a suitable vessel. Fish remains the staple

protein food of the population and although periodical shortages occurred during the year (owing to poor catches within the limited area covered by existing fishing activities) the price per "packet" (an indefinite quantity but one which is at least adequate for one meal for an average family) usually corresponded with about one and a half hours' wages for a casual town labourer. The operation (by private enterprise) of a Cold Store has done much to prevent a series of gluts and shortages in Victoria. One service rendered by the Cold Store is of great value to the Colony as a whole — the preservation of bait for use during times of shortages.

The following table shows exports of dry salted fish in recent years :

<i>Year.</i>	<i>Export in tons.</i>	<i>Value in Rupees.</i>
1951	142	32,415
1952	194	131,435
1953	95	49,383

2. *Turtles.*

The year's export of just short of 2,000 kgs. of calipee indicates that the slaughter of green turtles continues on a very much larger scale than previous reports of this Department would, on superficial reading, appear to indicate. The reports of recent years do, indeed, record similar (or slightly greater) exports of calipee but do not indicate what this represents in terms of slaughtered turtles. Assuming such a high yield as 2 kg. ($1\frac{1}{2}$ kg. is the more usual figure) it will be seen that these animals are still being caught at the rate of at least 1,000 per annum. Further information appears in Section II para. 5.

The market for tortoiseshell (the produce of the hawksbill turtle) was poor, but the material continued to be used by local craftsmen for the manufacture of cigarette-cases and such articles.

The following table shows recorded exports of green turtle and hawksbill turtle products during the year :

	<i>Quantity</i>	<i>Value in Rupees</i>
Calipee	1,959 kilos	34,000
Tortoiseshell	1,431 „	10,400

3. *Other Produce.*

Although possibly more suitably classified as a naturally occurring mineral, bird guano is usually referred to in this report. Exploitation continued on privately owned islands and islands leased from the Crown. This "fossil" guano has a very low nitrogen content but is a valuable source of phosphate which deserves greater attention by planters on the granitic islands. Birds eggs yolk was obtained as usual from a number of the more isolated islands, shark fins were prepared for export, and coco-de-mer nuts were collected for, chiefly, the Indian market.

The following table shows recorded exports during the year :

	<i>Quantity</i>	<i>Value in Rupees</i>
Bird Guano	8,859 metric tons	333,638
Birds egg yolk	9,519 kilos	12,689
Shark fins	2,197 „	8,483
Coco-de-mer nuts	2,045 nuts	3,286

D. Forestry.

1. General.

Activity was principally by the Department (see Section II para. 1) but a number of the more enlightened growers planted casuarina and conserved their natural stands of other timber trees. Seychelles coconut plantations have been referred to (by the late Director of Agriculture, F. Durocher-Yvon M. B. E.) as "mixed forestry enterprises" and reference to the forestry of the Colony would be incomplete without mention of this. No statistics concerning exploitation by private estates are available. As noted in connection with cinnamon distilleries, the price of firewood has risen in recent years.

SECTION II — THE WORK OF THE DEPARTMENT.

1. Forester's Report.

Progress

The establishment of a further 432 acres of plantation during the year 1953 brings the total acreage planted since the Re-afforestation Scheme's inception in November, 1950, to 1286 acres.

This figure falls considerably short of the annual planting target originally anticipated, but experience gained over the past three years indicates that the establishment of 2960 acres within the 5 years life of the scheme as originally outlined will be impracticable, due to many factors.

The first and most obvious of these factors is that general costs have risen sharply since 1950. This will, quite naturally, have the effect of reducing the total acreage that might otherwise have been possible for the same expenditure.

Secondly, the labour supply though considerably improved, is still insufficient to push the project on at the pace originally envisaged. It will readily be appreciated that to push on recklessly with the formation of new plantations merely to achieve a target acreage, without being in a position to maintain effectively the areas established, would be extremely unsound practise, even more so when it is considered that there is always a balance of several hundred acres remaining from earlier plantings to be maintained.

Owing to a fairly evenly distributed rainfall throughout 1953, weed growth has been more than normally luxuriant and its control has imposed a considerable burden upon the labour resources available, requiring a far larger proportion of the total labour strength than has hitherto been necessary for this work.

However, the rain also benefited the reafforested areas which, aided by rigorous weed control, have responded very satisfactorily. In many cases the forest canopy is forming so rapidly that it is anticipated a large proportion of the earlier established areas will be free from the need for weed control early in 1954.

The progress of the forests in general strongly supports the earlier promise of success to the re-afforestation scheme, and providing the present vigorous growth does not suffer any serious setback in the future a very valuable Colonial asset is bound to result.

Bush fires during 1953 were mercifully non-existent due mainly, it is presumed, to the lesson learned from the bad fires of 1952 and the fact that the vegetation never reached the same highly inflammable condition as prevailed in the S. E. Monsoon of 1952.

Sylviculture.

It now appears likely, judging from results so far obtained, that the selection of indigenous species at present being planted may, in the not too distant future, be substantially and profitably augmented with a selection of the introduced species at present undergoing trial, some of which are giving spectacular results.

Naturally the location and quality of the site upon which the introduced species are planted is the dominant factor, but it is gratifying to know that providing a suitable site may be found good results will follow.

Among the promising introduced species to-date may be listed the following which are showing good growth and vigour :

1. *Cedrella Mexicana.*

A small plantation on a favourable site has shown an average height growth of 14 feet since being planted out in November 1952. The most dominant specimen measures over 20 feet.

2. *Cedrella Odorata.*

This species has proved to be slightly slower than *mexicana* but the results are nevertheless, quite good, trees having shown an average height growth of 13 feet since planted in May 1952. The most dominant specimen measures over 18 feet in height. An unanticipated source of danger to the above two species is their susceptibility to Red Spider infestation which is damaging enough to produce yellowing and partial defoliation.

3. *Swietenia Mahagoni*

Swietenia Macrophylla

These two species though not so spectacular in growth as the *Cedrellas* have shown very steady progress and have an average height of 10 feet since being planted out in April 1952. The best specimen exceeds 13 feet.

It is also significant to note that though considerably slower than the *Cedrellas*, the *Swietenias* are usually more accommodating and are showing satisfactory results over a fairly wide range of sites. No trace of the dreaded hypsypyla shoot borer has been observed but both of the mahoganies suffer from the attacks of leaf miners. Fortunately they appear capable of throwing off such attacks with little effect upon their vigour, and do not suffer very much.

Tectona Grandis.

Though not a recent introduction it would appear that this species has never been given a proper trial and results to-date indicate that far superior growth may be obtained, when suitable conditions are provided, than has been the case hitherto. Though results have been rather patchy owing to the wide variety of sites that are being tried, several trees on one particular site are showing splendid growth and now exceed 22 feet in height — they were planted in November, 1952.

5. *Melia Dubia*.

This tree is also an old introduction, probably from the time of Mr. Dupont (the first Curator of the Botanical Gardens). Why it has not been cultivated more widely is a puzzle. Its rate of growth is faster than *Albizzia* and the timber is of superior quality, added to which, it would appear to be fairly accommodating as to choice of site.

The rate of growth of this species over a considerable number of sites since its introduction into the present re-afforestation scheme is quite phenomenal. Specimens have reached 16 feet in 8 months' growth.

The best specimen measured had grown over 27 feet in height within 12 months of planting. It was planted out for trial as a 6" seedling on 31.1.53 at Le Nioi Forest Area. When measured on 31.10.53 its height was 22 feet and girth at breast height 10". On 18.12.53 it was again measured and proved to be 27 feet 6 inches with a girth at breast height of 13" — truly spectacular growth! Judging by the rate of growth being shown by more recently planted specimens, the height growth of 27 feet in one year may not prove to be so exceptional, as most of those already planted are showing similar immense vigour.

A recently felled 20 years old specimen which was growing on a private estate had a girth at breast height measuring 9 feet and a clear bole up to 56 feet. When converted, it yielded over 1200 running feet of planks and madrier of excellent quality, the timber being considerably harder than one would anticipate from such rapid growth. The resultant converted timber was examined after two months of air seasoning — it was not protected in any way from the elements — and was found to be completely free from insect attack, and at that time, showed no apparent inclination to warp or shake.

The timber is fairly light and has a quite attractive grain which somewhat resembles open grained mahogany, though rather lighter in colour. In addition it is also said to be resistant to termite attack. This has yet to be proved.

Thus it will be seen that a better supply of this species is likely to be a very valuable addition to the present available range of home grown timber.

The only serious setback experienced with *Melia Dubia*, as with *Cedrella mericana* and *odorata*, is snail attack upon freshly planted specimens — which if not protected, are quickly girdled. Further introductions for trial during the year are as follows:

- | | | |
|---|---|---|
| 1. <i>Pinus merkussii</i> | : | Indonesia. |
| 2. <i>Eriodendron anfractuosum</i>
(Var "Randeo Lanang") | : | For Kapok research. |
| 3. <i>Albizzia odoratissima</i> | : | India. |
| 4. <i>Grevillea robusta</i> | : | India. |
| 5. <i>Terminalia belerica</i> | : | India. |
| 6. <i>Artocarpus hirsuta</i> | : | Failed to germinate
(India) |
| 7. <i>Bertholletia excelsa</i> | : | British Guiana (food crop
experiment). |

The species forming the bulk of the first rotation comprise Agati (*Adenanthera pavonina*) Takamaka (*Calophyllum inophyllum*) Sangdragon (*Pterocarpus indicum*) Bidamier (*Terminalia catappa*) Santol (*Sandoricum indicum*) and Calice-du-Pape (*Tecoma leucoxydon*).

It is considered that Teak (*Tectona grandis*), Leila (*Melia dubia*) and Mahogany (*Swietenia mahagoni*) (*Swietenia macrophylla*) and possibly *Ceirella mexicana* and *olorata* might now be used in more equal admixture with suitable companion species, it seeming fairly obvious that these species will do well here on suitable sites.

Jak (*Artocarpus Communis*) which has hitherto been used mainly as a food species will also be given more attention as a plantation tree in view of its rapid growth under plantation conditions and the excellent furniture timber it produces.

The incidence of shoot borer attack upon Agati (*Adanathera pavonina*) rose rather alarmingly during the later part of the year and has appeared over a widespread area. The attacks though seldom fatal usually destroy the leading shoot and tend to produce forked stems. One or two specimens have been noted on which the entire crown and half of the stem has died back. Fortunately damage to this extent constitutes an exception at present and has been observed only at one spot where the attack appears to have been more severe than previous attacks. In view of the vulnerability of Agati to this pest, the planting of this species will be considerably reduced in the future until such time as an adequate control may be discovered. A systemic poison might supply a solution, but the current cost of a suitable systemic and the quantity required is likely to be beyond the bounds of practicability at present.

Tung rats do not appear to be so numerous as they were and a second attempt at direct sowing has to-date almost completely escaped their attention.

Slugs and snails continue to be a nuisance and constant vigilance is required against them. *Melia dubia*, which is now planted on a wider scale than hitherto, has unfortunately proved to be extremely attractive to them, and can only be established with the aid of a generous distribution of poisoned baits maintained throughout the area until the young trees have outgrown the danger. Balsa (*Ochroma lagopus*) has shown vigorous growth, but is attacked by a leaf roller which is proving difficult to eradicate. Severe defoliation results from the attacks of this pest and the young trees suffer a distinct check. Attacks are sporadic and do not appear to occur during any particular period.

Both liquid D. D. T. and Lead Arsenate sprayings have been tried, but have not proved satisfactory.

Planting and Species Distribution Record.

<i>Species</i>	<i>Acreage</i>		
	<i>Forest Val Riche</i>	<i>Forest Le Nioi</i>	<i>Forest Grand Anse</i>
<i>Agati</i>	24	9	17
<i>Adanathera pavonina</i>			
<i>Santol</i>	66	57	83½
<i>Sandoricum indium</i>			
<i>Calice-du-Pape</i>	18½	3½	3½
<i>Tecoma leucoxylo</i> .	(15 acres inter- planting)		
<i>Takamaka</i>	8	74½	9
<i>Calophyllum inophyllum</i> .			
<i>Jak</i>	5½	4½	½
<i>Artocarpus Communis</i> .			

Planting and Species Distribution Record.

<i>Species.</i>	<i>Acreage</i>		
	<i>Forest Val Riche</i>	<i>Forest Le Niol</i>	<i>Forest Grand Anse</i>
<i>Leilia</i>	2	1½	12
<i>Melia dubia.</i>			
<i>Barria ammonilla.</i>	6½	-	7½
<i>Sandragon</i>		-	2
<i>Pterocarpus indicus</i>			
<i>Cedar</i>		-	
<i>Casuarina equisetifolia.</i>			
<i>Teak</i>	2½	(Few specimens only).	½
<i>Tectona grandis</i>			
<i>Badamier</i>	1	1	
<i>Terminalia catappa.</i>			
<i>Prenean</i>			1½
<i>Eugenia species.</i>			
<i>Jamblon</i>			1½
<i>Eugenia species.</i>			
<i>Cedrella mexicana</i>			¼
<i>Chukrenia tabularis.</i>	trial ½		(Few specimens only)
<i>Balsa</i>	trial ¼		
<i>Ochroma lagopus.</i>			
<i>Albizzia procera</i>	trial ½		
<i>Albizzia stipulata.</i>	trial ¼		
<i>Albizzia lucida.</i>	trial ½		
<i>Acrocarpus frosinilollus.</i>	trial ¼	(few speci- mens only)	trial ½
<i>Cryptomeria japonica</i>	trial ¼	(few speci- mens only)	(few speci- mens only)
<i>Terminalia belerica.</i>	trial : (Few speci- mens only.)		
<i>Darberfia sissco.</i>	do	—	—
<i>Camphor</i>			
<i>Cinnamomum camphora.</i>	do	—	—
<i>Cedrella toona.</i>	do	—	—
<i>Durian</i>	total ⅛	—	—

Total number of trees planted in 1953 : 522,650

Total Acreage of Forests as above.

Val Riche : 139¼

Le Niol : 152½

Grand Anse : 140

Fieldwork.

Weeding proved to be a very restrictive factor on progress. The advance of a creeping weed grass (*Panicum species*) known locally as "Gazontraille", aided by ample rainfall, exceeded all previous knowledge of its rate of spread and constituted a danger that could not be ignored.

Spot weeding did not appear to be sufficient to relieve the young trees for long, thus a clean weeding was eventually decided upon as the only satisfactory solution under the circumstances. The weed was hoed up and placed in contour rows with roots uppermost and exposed to the sun. This measure proved to be expensive and considerably restricted work in other directions, but the ultimate result proved very satisfactory. The young trees showed a distinct change within a very short time and rate of growth improved noticeably.

There can be little doubt that a thorough weeding of this nature is most beneficial, but owing to the high costs involved it is likely to remain purely an emergency measure unless time and results will prove it to be the cheapest method in the long run. The effect of the clean weeding upon the trees has in many cases stimulated growth to a surprising degree and, as stated earlier, many plantations have formed, if not a complete canopy, at least sufficient overhead shade to discourage re-colonisation by Gazontraille which, fortunately, is a light demander. This will substantially reduce the acreage of weeding necessary in 1954.

One important factor observed is that when sufficient overhead shade has been formed by the young trees, Gazontraille met very active competition from another weed species "Mange-Tout", which is recognised to be an excellent fodder. In almost every case, aided by the adverse influence of shade upon Gazontraille, Mange-Tout established itself in the place of Gazontraille, but without the harmful effect of the latter upon the young trees.

A ground cover of this species is highly desirable, natural grazing in Seychelles being very restricted and much fodder has to be transported to the cattle. Thus parts of the forest areas might in the course of time form a valuable fresh fodder reserve for the Dairies in time of shortage, or for ensilage. Any surplus to Government requirements might be made to contribute revenue by way of sale to the public. Such a system would also ensure clean plantations at no cost to Government and would also considerably assist local stock keepers to overcome feeding difficulties.

Praslin.

In view of the difficulty experienced in recruiting a suitable Forest Ranger and the even greater difficulty of securing an adequate labour force in Praslin, the re-afforested area at Newcome continued throughout 1953 on a care and maintenance basis, one overseer and a small labour force being employed there.

The progress of the plantations formed during 1951 and 1952 is very encouraging, particularly so in view of the generally poor soil in most of this area.

Badamier (*Terminalia catappa*) has shown excellent growth and in several plantations a canopy is forming. An experimental plot of mahogany (*Swietenia mahoganii*) planted on one of the better sites available has shown very good growth to date, and now averages 9 feet (planted June 1952).

The establishment of coco-plum (*Chrysobalanus icaco*) upon the eroded hill tops of Newcome is proving more difficult than anticipated and establishment has been rather disappointing. However, the results being

obtained indicated that the re-establishment of a soil cover can, with perseverance, be achieved. Efforts to this end will be continued, in view of the valuable data likely to be forthcoming and the need for practical research in this direction.

It is likely that when a re-commencement of re-afforestation in Praslin is recommended labour may have to be transferred from Mahe to complete the main work in Praslin.

Vallée de Mai.

The restoration policy being pursued in the Vallée de Mai is beginning to have visual results. Most of the artificially introduced exotic species have been removed and to-date over 2,300 fresh coco-de-mer have been sown, in admixture with Palmiste (*Deckenia nobilis*) Latanier (*Stevensonia grandiflora*) and Vacoa (*Pandanus Seychellarum*) etc.

A large number of the earlier sown coco-de-mer have germinated, and young shoots of the various palms are to be seen over a wide area.

It should not be many years before the rather unsightly "blanks" brought about by the removal of exotics will be filled with a flourishing selection of endemic palms and the valley begins to resemble its former and proper appearance, — to serve as a miniature "National Park" wherein visitors may see all the Seychelles palms and other endemic species in their natural surroundings.

Building.

Building during 1953 was confined to the construction of two model labourers' cottages at Le Niol Forest.

Utilisation.

The following produce was prepared by the Forestry Division during 1953 :

1. *Timber*

Planks (assorted)	53,688 running feet.
Madrier (assorted)	21,751 running feet.
Posts	12,730 running feet.

<i>Name of Timber.</i>	<i>Planks</i>	<i>Madrier</i>	<i>Posts.</i>
Albizzia	44,143 feet.	13,017 feet.	—
Cedar	2,960 "	— "	12,661 feet.
Agati	4,093 "	2,712 "	—
Bois Noir	1,143 "	1,553 "	—
Santol	151 "	1,083 "	—
Eucalyptus	504 "	425 "	—
Calice-du-Pape	207 "	988 "	—
Cedralla toona	13 "	333 "	—
Melia dubia	9 "	133 "	—
Jak	147 "	24 "	—
Badamier	— "	860 "	—
Takamaka	318 "	— "	—
Capucin	— "	623 "	51 feet
Bois Rouge	— "	—	18 "
GRAND TOTAL	53,688 feet	21,751 feet	12,730 feet

2. *Forest produce other than timber*

Cordwood	601 cords
Capucin charcoal	3,942 tins.
Cinnamon leaves	182,764 kilos.
Cinnamon bark	31,768 kilos.
Latanier leaves	12,071 units.

E. F. BREWER.

Forester.

In charge : Forestry Division.

2. Stock Inspector's Report

During the year the Stock Inspector operated the Veterinary Branch of the Department and also supervised the Animal Husbandry activities of Grand'Anse Estates and unleased Crown Lands.

(a) *Veterinary Branch.*

The Department continued to maintain its Animal Clinic at Union Vale, on the outskirts of Victoria, and the Stock Inspector also visited sick animals at the request of owners. Nominal fees were charged and free treatment was given in cases where owners were unable to pay. This service appeared to be much appreciated by the public.

In addition to minor dressings and the supply of medicines the Stock Inspector performed the following during the year :

Clinical examinations	430
Burdizzo castrations	100
Open-method castrations	128
Ovariectomy (bitches)	2
Minor operations (dogs and cats)	10
Vaccinations (Fowlpox)	250
Smears	80
Fæcal examinations	7

Every opportunity was taken to explain preventive and control measures to owners of animals.

Piroplasmosis (Redwater) in cattle responded to "Bedesan" and fortnightly dipping was recommended as a preventive. The efficiency of vaccination against Fowlpox was demonstrated as was the method. Coccidiosis responded to sulphamethazine, better hygiene, and feeding with buttermilk. The proven benefit to all farm stock which results from the feeding of mineral supplements was made known as widely as possible.

The Quarantine Stations on Hodoul and Long Islands were maintained and inspected every two months (more frequently when animals were in quarantine). The following animals were quarantined on arrival from overseas, for periods laid down by law :

2 Sindhi bulls, 10 Friesian heifers, 36 poultry, 2 pigeons, 4 canaries, 4 ducks, 1 dog, 1 cat and 4 Italian Queen bees.

Insecticidal sprays and dusts were used during the quarantine period, where appropriate, and diagnostic blood smears were taken. In no case was it necessary to refuse permission to import.

Three cage-birds and 2 guineafowls were exported, certification being provided according to the importing country's requirements.

(b) *Animal Husbandry by Grand'Anse Estates and on Unleased Crown Lands.***Cattle**

At the close of the year the Stock Inspector was responsible for 294 head, distributed as follows :

<i>Union Vale Dairy</i>					
	Bulls	Cows	Heifers calves	Bull calves	Total
Friesian	1	56	1	4	62
Sindhi	6	—	—	—	6
Friesian X Sindhi	—	19	17	11	47
Local	—	10	3	—	13
Jersey	—	2	—	—	2
Total	7	87	21	15	130

Other Grand'Anse Estates

Total 153 (including stud bulls)

Curieuse Island (Unleased Crown Land)

Total 8

At Stud on Private Estates

Total 3 (2 Sindhi, 1 Friesian)

Union Vale Dairy was the centre of activity, other Grand'Anse Estates serving as dry farms, for rearing Friesian X Sindhi heifers, for supplying young Sindhi stock, for stationing stud bulls available to the public, for the provision of milk to estate workers and the public, and for providing manure for estate purposes.

Production and progeny records were maintained at Union Vale, the highest individual yields for cows which completed a lactation during the year being as follows :

	<i>Total</i>	<i>Lactation</i>
Friesian ("Francine")	6,983 pints	357 days
Sindhi ("Juliette")	1,700 "	245 "
Sindhi X Friesian	2,851 "	264 "

Although these (and previous) records indicate that pure Friesian cattle out-yield the Sindhi X Friesian animals by a wide margin there is no doubt that the Department's policy of crossing (laid down by the former Veterinary Officer, Dr. Desai) is resulting in a very hardy and handy beast which well suits the Colony's needs and the type of feeding which can be expected.

A total of 238,298 pints of milk were produced at Union Vale from an average of 70 cows in milk, the average annual production per animal being 3,404 pints. 23,196 pints of milk were fed to young stock and the remainder (215,102 pints) sold retail at 25 cents per pint (delivered) and supplied to Government Institutions 28 pints of cream and 38 lbs. of butter were made and sold.

Cattle at Union Vale were fed hand-gathered fodder grass, maize silage, imported maize meal, local coconut cake, and mineral supplement. Grazing on the estate remained poor and limited. Elephant grass (*Pennisetum purpureum*) on bench terraces was a major source of fodder

On other Grand'Anse estates hand-gathered natural-growing fodder grass, some Elephant grass, and somewhat better grazing was supplemented by maize-meal, minerals and coconut cake.

The cattle at Curieuse Island suffered owing to the difficulty in ensuring adequate supervision. The proper herding of cattle, the importance of mineral feeding, and the use of maize meal for the purpose for which it is intended (rather than for the nourishment of the stockman) appeared to be little understood on nearly all estates. Little actual disease was encountered but cases of unwarranted malnutrition were too frequent. Tick infestation was controlled except where dipping and dressing was neglected. Dips were maintained at Union Vale, St. Anne Island, Anse Boileau and Grand'Anse Estates.

15 heifer calves were selected for replacements at Union Vale, out of a total of 65 calves born during the year. Ten heifer calves were sold to the public and 19 head of bull cattle were sold for slaughter. 10 Friesian heifers were imported from East Africa for putting to Sindhi bulls.

All calves, as usual, were weaned at birth and ear-marked by the Danish system.

Pigs: The breeding of Large White, local black, and cross pigs was continued on St. Anne Island and Anse Boileau estate (both Grand'Anse Estates). The keeping of pigs on Curieuse Island was discontinued owing to the difficulty in adequate supervision. The stock at the end of the year was as follows:—

	<i>Boars</i>	<i>Sows</i>	<i>Gilts</i>	<i>Young Stock</i>		<i>Total</i>
				<i>Above</i>	<i>Below</i>	
				<i>two</i>	<i>two</i>	
				<i>months.</i>	<i>months.</i>	
Large White	4	12	8	60	—	84
Local Black	1	4	1	—	—	6
Cross	—	2	3	—	29	34
	5	18	12	60	29	124

During the year 33 farrowings resulted in 274 piglets of which 230 were weaned. 146 piglets were sold for breeding and slaughter. One large white boar and 4 gilts were also sold to the public.

The feeding and care of pigs left much to be desired and towards the end of the year it was decided to limit pig-keeping on the Grand'Anse Estates to Anse Boileau and Union Vale. Future policy will, it is expected, be one of maintaining a small supply of young breeding stock for sale to the public. The Large White is appreciated by many pig-keepers but it seems that there is also a demand for a somewhat smaller black pig which will be less demanding as regards feeding and more resistant to heat-stroke. During the year it became evident that the number of pigs being produced by Grand'Anse Estates was often in excess of public demand.

Poultry : Rhode Island Red, local (chiefly Gallega bare-necks) and R. I. R. X Local fowls were kept by Grand'Anse Estates at Anse Boileau, hatching being transferred to Union Vale for convenience of supervision. The flock totalled 145 at the end of the year. 74 doz. eggs were sold for hatching, 340 doz. supplied to Government Institutions, and 24 doz. incubated. 23 pullets and cockerels were sold to the public. For ease in supervision plans were made at the end of the year to discontinue the Anse Boileau flock and concentrate on well-culled pens of R. I. R. and Gallega birds at Union Vale, with the aim of supplying the public with pure bred R. I. R. and R. I. R. X Gallega pullets and cockerels.

D. MORGAN,
Stock — Inspector
In charge : Veterinary Branch
and
Animal Husbandry.

3. Agricultural Chemist's Report

The Agricultural Chemist was responsible for the inspection of produce prior to export, laboratory work in connection with this and other duty, trials of imported insect parasites and other duties in connection with pest and disease control, the operation of the Central Distillery and the Central Coconut Oil Expeller, and inspection and certification in connection with the importation and export of plants and plant parts. Matters concerning pests and diseases are reported in Section II para. 4, and reports on the Distillery and Expeller are in paragraphs 7 and 8 respectively.

(a) *Laboratory.*

As during preceding years, work in the laboratory consisted mainly of the examination of produce prior to export and the examination of samples of fermented liquors the latter submitted by the Excise Department. Various other samples, submitted by Grand'Anse Estates, other Government Departments and the public were also examined.

A total of 765 samples, involving some 3640 determinations, were examined. The corresponding figures for 1951 and 1952 are 830 and 749 samples respectively. The control of the quality of cinnamon leaf oil prior to export continued to provide the main bulk of work : some 450 samples were examined in 1953, two of which were found to be slightly adulterated with mineral oil. Out of the 254 samples of fermented liquors submitted by the Excise Department, 41 were found to be "La Purée", which amounts to 16.1%. As shown in the following table, there has been a regular decrease, in recent years, in the number of samples of "La Purée" per cent samples of fermented liquors.

Years	1948	1949	1950	1951	1952	1953
No. of samples of fermented liquors examined.	140	199	197	151	222	253
Samples of "La Purée" %	51.2	46.2	35.9	30.0	26.5	16.1

(b) *Inspection.*

The work of the Produce Inspector, at the Customs Sheds, continued to be supervised from the laboratory. Produce coming under the control of the Produce Inspector are : Copra, cinnamon bark, salt fish and dry patchouli leaves. The main work of the Produce Inspector consists of the examination of copra deposited by producers for export. As in former years, a strict control was maintained. After examination with assessors, some 100 lots were declared to be substandard and unfit for export, and were returned to the manufacturers. The larger part of this copra came from a small number of producers either with inadequate or defective driers, or who had not been careful enough in the preparation of their produce. Towards the end of the year there had however been an improvement in the standard of copra of these producers, some of whom had carried out much needed repairs to their driers. On the whole the quality of copra deposited for export was very satisfactory. With the large increase in the export of cinnamon bark in 1953, the Produce Inspector had to devote a large part of his time to the examination of cinnamon bark deposited for export. Although very variable in type, ranging from thick bark, 10 to 15 years old, to thin bark, 3 to 5 years old, the cinnamon bark deposited for export was generally satisfactory in quality. More samples of dry patchouli leaves were also collected in 1953, for testing in the Experimental Distillery attached to the laboratory, following the increased export of patchouli leaves. One lot of leaves was rejected as unfit for export, on account of a too low content of oil.

The inspection of plants and plant parts imported into the Colony, and the issue of import permits, were carried out at the Custom Sheds. The examination of plants and plant parts intended for export and the issue of covering certificates was carried out on request. As in previous years advice was given to producers and planters whenever requested.

G. LIONNET,
Agricultural Chemist.

In charge : Laboratory, Inspection, Central Distillery etc.

4. Work on Pests Diseases and Vermin.

Apart from normal extension activities the Department was concerned in certain direct action against pests and vermin.

Melittomma insulare :

Following Mr. E. S. Brown's investigations and practical recommendations (see 1952 Annual Report) approval was obtained for expenditure on a "Melittomma Control Praslin Pilot Scheme". The aim of this scheme was the systematic treatment of all (or most) infested trees in the island of Praslin, employing Government-paid "Melittomma Assistants" and (normally) estate-paid labour. Mr. J. Dookley (who had worked with Mr. Brown) was selected as the Senior Assistant and work commenced in September on three estates. 3 Assistants worked under Mr. Dookley, and an average of 3 labourers were provided by each of the estates concerned. Work progressed slowly at first — an average of 7 trees per day being treated by each team — but later in the year some improvement was achieved. It was soon evident that although it was certainly possible for an Assistant (aided by labourers) to treat one tree every twenty minutes—as has been demonstrated by Mr. Brown — this rate of progress was far

higher than could be achieved, week in and week out, in the field. However, treatments at the rate of some 500 per month were carried out and much valuable experience was gained. By the end of the year it was clear that it would be necessary to employ a considerably larger force of trained operators if Praslin plantations were to be treated within the period originally envisaged (four to five years). The chemical used was paralichlorobenzene and this fumigant was also sold to the public (with instructions and frequently with demonstrations) in Mahe — where no organised scheme is contemplated at present.

Oryctes monoceros :

Since *Scolia ruficornis* does not appear to have established itself in La Digue further efforts were made to obtain live specimens of *Scolia oryctophaga* from Madagascar, but arrangements were not complete by the end of the year.

Cosmopolites sordidus :

Further consignments of *Leinota quadridentata* and *Leinota Columbiana* were liberated in banana plantations infested with *Cosmopolites sordidus* and larvæ of the latter were observed being attacked. The predators were flown from the Commonwealth Institute of Biological Control, Trinidad, to Kenya, and thence shipped to Mahé. Thanks are due to Dr. F. J. Simmonds of the Institute for his kind assistance.

Vermin : Rats :

The tail-bounty was continued as in previous years, the payment of this being the responsibility of the Police. A variety of poisons were on sale to the public and a small supply of anti-coagulant rodenticide was ordered for trial.

5. Unleased Crown Lands.

The Department continued in charge of the Mont Fleuri Botanical Gardens, Government House grounds, Seychelles College and Hospital grounds, Victoria town gardens and playing fields and a number of other unleased Crown Lands.

Mont Fleuri Botanical Gardens were maintained. A number of small labour-consuming flower beds of little botanical or ornamental value were grassed over, two beds of bougainvillea were planted, drainage was improved, a hedge was planted, the annual excavation of soil from banks adjoining the main drive (for drive repairs) was stopped and the excavations were filled in and grassed. Compost heaps were started, and unsound specimen trees were felled.

Ornamental and Sports Grounds were maintained in an adequately tidy fashion and trees past their prime or obstructing roads and vistas were felled.

Small areas of unleased Crown Land in and near Victoria Township remained under the charge of the Department, but nothing more than foot-path clearing was considered justified as praedical larceny (common throughout the Colony) is particularly prevalent in and near Victoria. The majority of these areas are catchments and odd corners of land between Government Institutions and housing and between the numerous small house plots leased to deserving persons at nominal rents.

Productive Unleased Crown Lands :

Apart from the yield of the considerable areas of forest operated by the Department (see Section II para. 1) produce (chiefly coconuts) was obtained from a number of small areas of Crown Land which await sale, lease, or other disposal or which are retained by Government as catchment areas. Coconuts from Round and Long Islands (Mahe) and Atse Royale Crown Land were transferred to Grand'Anse Estates and coconuts from the Praslin Crown Lands were sent to Curieuse Island to be made into copra.

Curieuse Island :

Part of this island (on which the Colony's leper Settlement is sited) was operated as a coconut estate. It was decided to discontinue animal husbandry apart from stock required for the island's needs.

Aldabra and Cosmoledo Atolls and Assumption Island.

These islands, forming the "Aldabra Group", continued in the charge of the Department. 8 labourers and a manager were employed on Aldabra for the harpooning of turtles but there was no supervision of Cosmoledo or Assumption. As a trial, turtles ex-pond Aldabra were offered for tender but the system was not successful. In all, 120 turtles were received in Mahe from Aldabra and owing to difficulties concerning disposal the Department actually engaged in the sale of turtle meat from the first consignment. Government finally decided to endeavour to lease the islands, but only with stringent conditions designed to ensure conservation of natural resources and the protection of rare wild life (sea-birds, giant tortoises). A Mombasa-based steam vessel exploited coastal waters during part of the year.

6. Grand'Anse Estates

These estates were purchased at various dates since 1939 by Government and transferred to an organisation known as Grand'Anse Estates which is controlled by a Board of Directors, whose Chairman is His Excellency the Governor. The Director of Agriculture is a member of the Board and is in charge of all activities. The Development Officer (Mr. Mason), assisted by the Stock Inspector, acted as general manager. A number of the Department's officers have been formally seconded (whole or part time) to the Estates and others devote part of their time to work in connection with the Estates.

Details of the estates are as follows :

Name of	Area in acres.	Date purchased.	Land Utilization
Grand'Anse	1,180	1939	Coconuts, cinnamon, food-crops, sugarcane, terrace cropping, cattle (Sindhi and local). etc.
Souvenir	200	"	Vegetables, fruit, cattle, cinnamon.
Anse Boileau	1,032	"	Coconuts, cinnamon, food-crops, sugarcane, terrace cropping, cattle (Friesian Sindhi-Friesian Cross & Local), pigs, etc.

Name of	Area in acres.	Date purchased.	Land Utilization
Foret Noire	928	1939	Coconuts, cinnamon, food-crops, sugarcane, terrace cropping, cattle, (local).
Union Vale	240	1944	Coconuts, pasturage & Dairying. Terraced Fodder Crops, Pigs, Poultry.
St. Anne Island	500	1948	Coconuts, cattle (Friesian-Sindhi Cross), Large White pigs.

Policy and Programme of Work.

The policy and activities of the Estates have developed over the years. The objects of the original purchases were :

- (a) To attack on a large scale the serious problem of re-afforestation.
- (b) To set examples of estate husbandry.
- (c) To illustrate the best methods of coconut cultivation.
- (d) To demonstrate on an economic scale the cultivation of new essential oil crops.
- (e) To put into execution a scheme of land settlement for the benefit of the poor.

The present activities of the Estates (now employing some 450 workers) include :

Copra production — for export and for supplying estates workers and Victoria with high grade oil.

Cinnamon leaf oil production — for export.

Cinnamon bark production — for export.

Sugarcane production — for supplying Grand'Anse and Victoria "Bacca Clubs" with cane for milling to fermented liquor.

Production of tropical root and green vegetables and fruits — for sale to estates workers and Victoria Institutions and public.

Production of milk — for sale to estate workers and Victoria Institutions and public.

Production of temperate — climate root and green vegetables — for sale to Victoria Institutions and public.

The improvement of the Colony's livestock — by the sale to the public of the progeny of imported cattle and pigs raised by the Estates and the provision of stud services.

Land Settlement Scheme — providing leasehold small holdings for chosen tenants.

Features of the Estates include model worker's cottages (each with garden), creches for the care of workers' children, the only 4-wheel tractor on Mahe, a retail vegetable stall in Victoria market, milk roundsmen delivering cooled and bottled milk, areas of terraced land producing vegetables and fodder grass (virtually unique in the Colony) etc.

The estates combine both production, demonstration and the provision of technical services and their accounts, not unnaturally, show very much smaller profits than the Colony's planters have been

obtaining in recent years from areas comparable to those operated by Grand'Anse Estates. Food production by the Estates has undoubtedly been at a loss in recent years and if the fertility-building and general livestock improvement aspect is disregarded the Estates' animal husbandry activities have also shown a loss. Copra, cinnamon products and sugarcane have been produced at a profit which has more than off-set losses resulting from other activities.

During the year under review the Board of Directors began discussing future policy, it having been suggested that apart from the achievement of (original) objects (a) and (e) it was undesirable and unnecessary for a Government sponsored organisation (or a Department of Government) to operate such a very large area of land.

The year's work.

(a) *Coconuts and Copra* : Yields on all Estates were considerably lower than in 1951 or 1952, as is shown by the following table :

	<i>Annual Yields. (Nuts).</i>		
	<i>1951</i>	<i>1952</i>	<i>1953</i>
Grand'Anse	328,536	359,530	284,393
Anse Boileau	563,161	651,314	544,685
Foret Noire	214,038	245,511	196,577
Union Vale	93,910	80,531	55,049
St. Anne Island	597,452	601,550	512,660

Disposal of nuts was as follows :—

Carry-over from 1952	32,073	Converted to copra	1,512,505
Estates production	1,593,364	Sold fresh	88,536
From Crown Lands	35,977	Ration to workers	3,851
		For seed	998
		Bad nuts	2,875
		Livestock feed	3,899
		Carry-over to 1954	48,790
	1,661,414		1,661,414

220.996 tons of copra were produced, giving a conversion ratio of 7,200 nuts to the ton. 215.567 tons of copra were exported and 60.921 tons crushed on Estates and at the Government Central Expeller, part of this tonnage representing a carry-over from 1952. The oil produced was sold at the Victoria retail stall, to Government Institutions and Estates workers, issued as free rations to workers and used on the Estates.

A number of areas were cleaned of scrub and replacement and inter-planting was carried out where necessary.

(b) *Cinnamon* : The distillery (at Grand'Anse) was overhauled and re-roofed and due to this work it was out of operation during the first half of the year. A total of 289.311 tons of leaf were collected at piece-work rates on Grand'Anse, Anse Boileau and Foret Noire Estates, yielding 1709.9 kg. of oil (a yield of 5.91 kg. per ton of leaf). 63.342 tons of leaf were harvested from Union Vale (of which 54.063 tons were sold by tender and the remainder distilled at the Government Central Distillery. 12,211 kgs. of dry (unscraped) bark and 1,839 kgs. dry scraped bark were prepared on the estates, the latter being for trial distillation by the Agricultural Chemist.

(c) *Sugarcane* : Despite a slight shortage in December and a small surplus in July it can be said that the supply of cane was well adjusted to demand. The following table shows disposal :

Sold to Victoria "Bacca Club"	404,178 tons
Sold to the public	7,119 tons
Crushed on Estates for liquor	166,939 tons

The liquor ("Bacca") produced on Estates was retailed to Estates workers and others during permitted hours at liquor shops operated by the Estates. Private estates, it may be mentioned, are not permitted to offer this facility to their workers. The Estates' liquor shops and the Government-supervised Victoria "Bacca Clubs" are the only legal sources of fermented sugar-cane juice in the Colony.

The cane variety M 134/32 introduced in 1951 shows much promise, but it is too early to say whether it is likely to replace the POJ varieties widely grown in the Colony.

(d) *Foodcrops* : Pumpkins, egg-plant, loofah, snakegourd, local spinaches, elephant yam, sweet potatoes, cassava and other tropical crops yielded well, but the season was unfavorable for temperate-climate crops such as cabbage, carrots and the like. Vegetables were grown on areas of highly calcareous sandy soil which had been cleared of coconuts in 1940, and also on terraces. All available manure produced on the three West Grand'Anse Estates was employed, together with spent leaf from Grand'Anse distillery and purchased inorganics. Overhead irrigation was employed in many cases on the flat sandy "Plateaux". Severe chlorosis was observed on many areas, and was present to a greater or lesser extent on all plateaux. Terraced soils responded to applications of calcareous sand. As has been stated previously, production was at a financial loss. The standard Ferguson tractor was used for transport. Owing to repeated trouble with the hydraulic lift the tractor was little used for mechanical cultivation, but because of prevailing labour costs it is doubtful whether this resulted in any financial loss.

The following table is a record of production during the last three years :—

	1951	1952	1953
Tropical root-crops	44 tons	47 tons	46½ tons
Tropical fruits	136,176 units	82,208 units	104,748 units
Corn on cob	—	8,254 units	1,159 units
Cabbage	2,361 tons	15,495 tons	9,061 tons
Sundry vegetables	26,448 tons	38,938 tons	39,901 tons
Maize grain	2,186 tons	1,943 tons	3,681 tons

Produce was sold to Government institutions and the public from the Victoria retail stall, and to workers on Estates.

(e) *Fodder Crops* : Approximately 125 tons of maize silage were made at Union Vale and fed during the August-October dry period. A considerable acreage of elephant grass was grown on terraces on the same estate and fed to cattle. Small areas of elephant grass were grown on other estates but cattle on these obtained most of their bulk fodder from hand-cut natural-growing grass, and from grazing.

(f) *Livestock* : Reference will be found in Section II para. 2 (Stock Inspector's Report).

(g) *Estate Works* : Terracing continued on eroded slopes at Grand Anse, Foret Noire and Anse Boileau until June, when the Board directed that the work should cease for reasons of economy.

Irrigation water was made available for the Anse Boileau terraces early in the year.

5 labourers' houses were completed (work having started in 1952). An Assistant Manager's house was burnt down and rebuilding was commenced.

As stated previously, repairs and re-roofing of the distillery were done early in the year.

(h) *Land Settlement Pilot Scheme* : The system under which workers on Grand'Anse Estates were provided with free housing and permission to cultivate half an acre of land adjoining has, in previous reports, been referred to as a "part time settlement scheme" but it might be better described (in English agricultural parlance) as the provision of "tied" housing and garden. Undoubtedly it represented an advance over customary plantation practice in the Colony which has been the granting of permission to workers to engage in share-cropping — with or without the provision of free housing (generally of a somewhat primitive character) but it was not true settlement. It is of interest to note that the response of workers to the provision of half an acre of garden was very varied — some making full use of the concession and others not taking the trouble to cultivate. A similar response would, of course, be found among any group of employed persons in any country.

In the 1952 Annual Report brief mention was made of preliminary work in connection with the Land Settlement Pilot Scheme which was carried out by the late Director (F. Durocher-Yvon M. B. E.) This Scheme, in brief, is the trial of a true settlement scheme under which carefully chosen tenants are leased areas of land on Grand'Anse Estates with house, easy access to water, the loan of two cows and hand tools, and a guaranteed market for their crops. Carefully worded leases provide for termination in the event of non-compliance with the instructions of the Director of Agriculture as regards soil conservation and husbandry generally. Rental was fixed at cents 50 per acre per month for the first two years and Rs. 1.50 per acre per month for the next eight years (with lessors having option to raise the rental after that period). Leases are to come to an end on the death of the lessee.

Agreements were signed early in the year in connection with six 10 acre plots at Anse Boileau and a small plot (on level land) some distance away. The men chosen were two ex-labourers from Anse Boileau Estate, four men recently discharged from the Royal Pioneer Corps, and one ex-Department of Agriculture employee retired on pension. All have been loaned tools and one heifer (no pressure having been applied at this stage to enforce the keeping of more than one animal on loan, such not being obligatory under the terms of lease) and all soon acquired either poultry, pigs, their own cattle or, indeed, all three. During the early stages of occupation tenants were permitted to purchase vegetables from Anse Boileau estate, but this concession was later withdrawn in order to encourage self-sufficiency. It was made clear to all six tenants on hillside land that a programme of slow but steady terracing was ahead of them and a proven method was demonstrated. Small areas of terrace have been built and as long as progress was apparent at each inspection no severe pressure has been applied during this first year of tenancy. During future years, however, it will be essential to insist on a regular quota except in the case of illness in order that the land can be fully protected while the tenants are favoured with good prices for their coconuts.

Tenants entered into occupation on varying dates (February, March and June) so in the following table production and cash income have been reduced to an average figure for one month. It should be borne in mind that tenants of plots 5 and 6 entered into occupation too late for them to take advantage of the main vegetable planting season. It should be noted that the table gives no indication of the substantial quantity of produce which is consumed by the tenants and their often numerous dependents, nor of any produce which they may sell (contrary to the present terms of lease) other than through Grand'Anse Estates.

Average Monthly Production and Cash Income therefrom.

<i>Plot No.</i>	<i>Coconuts (units).</i>	<i>S. Cane Kgs.</i>	<i>Roots and veg. Kgs.</i>	<i>Fruits (units).</i>	<i>Cash Income Rupees</i>
1.	795	1,516	12	—	137.10
2.	544	2,498	92	285	162.64
3.	832	155	38	271	99.88
4.	729	1,501	21	7	136.39
5.	1,103	2,682	2	60	151.21
6.	728	1,735	21	—	126.38
7.	1,631	—	98	—	Not available See below —

Plot No. 7 is not comparable with the other (10 acre) plots as it is on 6 acres of level land and its coconut yields are much higher owing to the nature of the ground. Although final figures are not available at time of writing it appears that the monthly average income of the holder of Plot No. 7 is considerably higher than that of all other plot-holders. It is fairly clear that the presence of coconuts and sugar cane on any plot definitely discourages food production at present price levels as an adequate income can be obtained without intensive food growing. This point, and a number of others, will require careful study. There is no doubt that a satisfactory living can be obtained from the plots with present prices for cash crops and all tenants are extremely satisfied. Plans have been made for opening up a further 50 acres at Foret Noire Estate, plots in this area to be of five acres and rentals somewhat higher. These new plots, if the plan is approved, will have sea frontages or separate allocations of foreshore and the amount of terracing required will be much less than in the case of the six Anse Boileau plots. The result of the leasing of the Anse Boileau plots has been a flood of requests for leases of future plots and there should be no difficulty in finding tenants. Present policy is to avoid, as far as possible, excessive control over tenants as regards choice of crops and it is hoped that the present arrangements by which produce is purchased by Grand'Anse Estates can be dispensed with and marketing be allowed to take place individually or co-operatively according to the wishes of tenants. Co-operative marketing is unlikely to develop for many years (if at all) owing to the independent character of the people, and it is more likely that a demand for public transport facilities (to facilitate the marketing of produce by growers or their wives) will arise. The aim is to avoid running these settlements as a "scheme", the object being to restrict Government's role to that of a just landlord who insists on mixed farming and soil conservation. Clauses requiring the cultivation of considerable areas of food crops will be retained, as increased food production is one of the main objects of these leases.

7. Central oil Expeller.

Operation of this plant, which was erected in 1952, started early in January, 1953.

The plant consists of a Robey No. 32 locomotive-type boiler, a single cylinder medium stroke horizontal Robey steam engine, capable of 32 B. H. P., primary and secondary crushers, a Greenbat No. 1 oil expeller, capable of expelling 3 cwts. of copra per hour, a No. 5 Filter Press with 23 chambers and 18" square plates, one feed water pump, one steam pump for oil, two rotary pumps, elevators, settling tanks and accessories.

Some "teething" troubles were experienced at first, a breakdown occurring in January. The plant operated satisfactorily during the rest of the year, producing unfiltered oil out of second-grade copra, from various producers, for soap-making and filtered oil out of a mixture of first and second grade copra, from the Government-owned Grand'Anse Estates, for sale to retailers and the public at the Victoria market and for distribution as rations to estate workers.

The plant was operated on a service basis, the sum of Rs. 45/— being charged per ton of copra crushed. The larger part of the copra processed was substandard, rejected as unfit for export at the Custom sheds.

A total of 125,469 tons of copra were crushed; 46,769 tons came from the Grand'Anse Estates, which have thus contributed some 37.3% of the total quantity processed. The total quantity of oil obtained was 73,847 tons. The average oil extraction per cent copra for the year was thus 58.8 for a single pressing of the copra meal. It is some what lower than the figure of 62% which might be obtained from the plant with a single pressing but it compares favourably with the figures of 52% to 53%, usually obtained from the local wooden bullock-powered mills. The somewhat low extraction figure was due to the poor quality copra processed, which was often overmoist. Extreme extraction figures of 49.0 and 61.7% were obtained.

The plant operated during 121 days only in 1953, insufficient copra being available for operation to full capacity. The number of working hours per day averaged 7.1, while the crushing rate averaged 145 kilos (2.8 cwt.) per hour, or just over a ton per day. As the plant is capable of crushing some 250 tons of copra in a working year of 240 days of 7 to 8 hours, it was running at 50% under capacity in 1953.

8. Central Distillery.

As in former years, the Central Distillery was engaged almost exclusively in the distillation of patchouli oil for planters and dealers in essential oils. However, due to the slump experienced by the patchouli oil industry in 1953 and the increased export of dry patchouli leaves, which seems to have taken place at the expense of patchouli oil export, very little work was done at the Central Distillery during the year under review. The activities of the distillery in 1953 were perhaps the least in its whole history. The following table records the amounts of materials processed and the yearly averages of oil obtained during the last three years :

	1951		1952		1953	
	Wts. of material in tons.	Av. Yield of oil in litres per ton.	Wts. of material in tons.	Av. Yield of oil in litres per ton.	Wts. of material in tons.	Av. Yield of oil in litres per ton.
Cinnamon leaves	—	—	—	—	7.700	6.6
Patchouli leaves	58.966	51.4	20.835	51.2	1.903	55.0
Cinnamon bark	4.870	4.4	0.591	4.6	—	—

9. Trials, Extension Work and Sundry Services.

Crop and manurial trials have not been a feature of the Department's work in recent years. The Agricultural Chemist carried out a little work on the potash manuring of coconuts and the production of papain and the Forester had small observation plots and growth-increment plots, but apart from this there is nothing to report beyond a certain increment of knowledge as a result of the direct production which has occupied so much of the time of all members of the staff.

The Director, Agricultural Chemist, Stock Inspector and Forester found time for some advisory visits but the Department had no field staff specifically for instruction. Some, though by no means all, of the activities of Grand'Anse Estates formed useful demonstrations to the public. The departure of Mr. Durocher-Yvon and the appointment of the new Director resulted, inevitably, in a break in the Department's contact with planters in need of advice while the new Director acquired the necessary local knowledge.

Apart from the services already referred to in this report the Department (either directly or through Grand'Anse Estates) supplied vegetable seeds, fertilisers, insecticides, poisons etc. to the public at landed cost plus a small percentage and took orders for ornamental and fruit trees, yam cuttings, clove and kapok seedlings, etc. Certain aspects of this work could be performed equally well by private enterprise and unsuccessful efforts were made to encourage the establishment of a nursery. It appears that the public have always been accustomed to the Department acting as nurseryman, seedsman and horticultural sundriesman and, indeed, see nothing strange in such activities by a Government Department. The absence of a Planters Association (or Co-operative) engaged in bulk-buying for its members is much to be deplored, but the rugged individualism of the planters makes any such association unlikely.

SECTION III — LEGISLATION.

1. Legislation Enacted.

No Ordinances affecting Agriculture were enacted during the year.

SECTION IV — STAFF AND GENERAL.

1. Staff Changes.

Mr. F. Durocher-Yvon M. B. E., former Director of Agriculture, was appointed Provincial Agricultural Officer Barotse Province, Northern Rhodesia, and left Seychelles on May 15th. 1953 on leave prior to taking

up his new post. It is gratifying to be able to record that in acknowledgement of his untiring efforts and initiative in the furtherance of agricultural development in Seychelles Mr. Durocher was awarded the M. B. E. on the occasion of Her Majesty's coronation. Mr. Durocher-Yvon spent nine years in Seychelles and was responsible for a very large part of the development which has taken place during that period.

Mr. A. Jefferiss B. Sc. Hort. (formerly Chief Fruit Inspector, Palestine, and Agricultural Officer, Tanganyika) was appointed Director of Agriculture and assumed duty August 19th. 1953.

Mr. J. F. Guy Licnnet, Agricultural Chemist, was Acting Director of Agriculture from May to August.

2. General.

Mr. E. Brown, of the Commonwealth Institute of Entomology, completed his work on the coconut borer *Melittomma insulare* and returned to the United Kingdom in March 1953. Before leaving he assisted the Director in the planning of a control scheme. Prior to Mr. Brown's visit no useful means of controlling *Melittoma* was known, while as a result of his work a simple method of fumigation gives a kill of from 90 to 100% of larvae in the affected trees. Mr. Brown's work is likely to result in very great and lasting benefit to the Colony.

I wish to record my appreciation of the staff of the Department and Grand'Anse Estates, of the valuable counsel received from the Agricultural Board and Fisheries Committee, and of the local press for the publicity which it has always given to matters affecting the welfare of Agriculture in the Colony.

A. JEFFERISS,

Headquarters, Department of Agriculture,
Mont Fleuri, Mahé, Seychelles.

Director of Agriculture.

20th April, 1954.

